



HALLIWELL

LUKE DE SCHOT

SENIOR RESEARCHER, HALLIWELL FIRE RESEARCH

NEW ZEALAND

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SPECIALTIES

- Fire safety engineering
- Human behaviour
- Image analysis
- Fire and smoke modelling
- Evacuation modelling
- Construction litigation
- Passive fire protection
- Aeronautical and mechanical engineering
- Forensic reconstruction

BIOGRAPHY

Luke is a highly experienced fire safety professional, with a robust background in both practical engineering and academic research. He has successfully executed fire safety designs for a wide variety of structures, including mixed-use facilities, civic buildings, residential complexes, heritage structures, healthcare establishments, offices, and warehouses. His expertise spans several key areas, such as fire dynamics, human behaviour in fire, egress modelling, fire and smoke modelling, and passive fire design and assessment.

Beyond his practical experience, Luke has honed his skills in supervisory and lecturing roles during his PhD studies at the University of Canterbury. He has been actively involved in ISO standards development and serves as a member of New Zealand's representation on Technical Committee 92 (TC 92 – Fire Safety), Sub-committee 4 (SC4 – Fire Safety Engineering), Working Group 11 (WG 11 – Behaviour and Movement of People).

QUALIFICATIONS

- MEngSt (Fire Engineering) with Distinction, University of Canterbury, 2021
- NZ Certificate in Tikanga (Mātauranga Māori), Te Wānanga o Aotearoa, 2021
- MEMgt with First Class Honours, University of Auckland, 2017
- Diploma in Aeronautical Engineering Management and Certification, NMIT, 2014
- BE (Mechanical Engineering) with First Class Honours, University of Auckland, 2012

INDUSTRY CERTIFICATIONS, LICENSES AND MEMBERSHIPS

- Member, International Association for Fire Safety Science (2022 - present)
- Professional Member, Society of Fire Protection Engineers (SFPE) Global, (2021 - present)
- Vice President, SFPE University of Canterbury Student Chapter (2023 - present)
- Chartered Member, CMEngNZ (Engineering New Zealand)

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- Professional Member, Engineers Australia MIEAust (Engineers Australia)
- Chartered Professional Engineer, New Zealand / Australia (CPEng)
- Registered Professional Engineer, Australia (NER)
- Registered APEC Engineer, (Engineers Australia / Engineering New Zealand)
- Registered International Professional Engineer, IntPE (Australia / New Zealand)

PROFESSIONAL EXPERIENCE

Since joining Halliwell Fire Research in 2022, Luke has been actively involved in preparing documentation and analyses to support expert witness proceedings in both New Zealand, Australia, and the UK. His work has covered several areas, such as:

- Combustible external cladding
- Fires in warehouses
- Building code compliance of active and passive fire protection systems in residential and commercial properties
- Image analysis and forensic reconstruction

Luke's responsibilities include conducting desktop reviews and site inspections, performing theoretical analyses, computer modelling, image analysis, material characterisation, fire resistance testing, and experimental reconstruction investigations.

PEER REVIEW

Luke regularly conducts peer reviews for performance-based fire engineering designs in New Zealand. These projects typically involve more complex analysis with fire and smoke modelling and/or risk-based approaches to fire safety.

RESEARCH BACKGROUND

Luke's primary research interests focus on human behaviour in fire. He is currently pursuing doctoral research that explores the use of virtual reality to collect individual movement data within crowds. This research includes the design and development of virtual environments, data collection through motion capture and conventional image analysis methods, and the statistical analysis and effective communication of the results. He also contributes to the research community as a peer-reviewer for leading scientific journals, including *Safety Science*, *Fire Safety Journal*, *Fire Technology*, and *Acta Psychologica*.

Additionally, Luke serves as a guest lecturer for postgraduate fire engineering courses in New Zealand and participates in co-supervising undergraduate students. Luke has taught into a range of courses at the University of Canterbury;

- Fire Engineering
- Human Behaviour in Fire

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- Forensic Fire Engineering
- Systems Engineering for a Changing Climate

WORK HISTORY

- 2023 - Present | Halliwell Fire Research | Senior Researcher
- 2022 - 2023 | Prometheus Fire and Research | Director / Researcher
- 2020 - 2023 | WSP | Senior Fire Engineer / Team Leader
- 2019 - 2020 | Enlightened Fire Solutions | Fire Engineer
- 2012 - 2019 | NZDF | Engineering Officer (Avionics and Structures)
- 2017 – 2018 | Precision Aerial Imaging and Research | Director of Engineering
- 2006 – 2012 | de Schot Aerospace | Director / Avionics Engineer
- 2002 - 2006 | Air New Zealand | Avionics Technician
- 1998 - 2002 | NZDF | Avionics Technician

SELECTED PUBLICATIONS

- de Schot, L., Nilsson, D., Lovreglio, R., Cunningham, T., & Till, S. (2023). Exploring single-line walking in immersive virtual reality. *Fire Safety Journal*, <https://doi.org/10.1016/j.firesaf.2023.103882>.
- Geoerg, P., de Schot, L., & Lovreglio, R. (2025). Decoding Hospital Evacuation Drills: Pre-movement and Movement Analysis in New Zealand. *Fire Technology*, 1–27. <https://doi.org/10.1007/s10694-025-01731-z>.
- Geoerg, P., de Schot, L., & Lovreglio, R. (2025). Understanding pre-movement time and movement speeds in hospital evacuations <https://www.sfpe.org/publications/periodicals/sfpeeuropedigital/sfpeeuropa39/europeissue39feature3>.